

PASTORIZA
ELECTRONICS, INC.

DAC 10 IC

DIGITAL ANALOG CONVERTER

INTEGRATED CIRCUIT DIGITAL TO ANALOG CONVERTER



GENERAL DESCRIPTION

Model DAC 10ic is a complete miniaturized Digital-to-Analog Converter on a single printed circuit board. It accepts 10 parallel binary bits and converts them to a D.C. voltage. It is triggered by an external command signal and stores the input binary number in an internal register for holding until the next command signal. Storage and conversion require 1 microsecond settling time.

Model DAC 10ic is especially designed for systems applications. External connections are provided to permit its operation in a number of modes. The normal output range of 0 to -10 volts may be offset to ± 5 volts. The gain of 10 millivolts per bit may be varied by the addition of external resistance to output ranges up to ± 10 volts. The unit contains an operational amplifier which provides a low output source impedance and maximum flexibility.

DAC 10ic utilizes integrated circuits to achieve premium performance in a small space. All active components and diodes are silicon. The basic card holds sealed sublogic modules for ease of repair and flexibility in packaging. DAC 10ic fits a wide variety of card types and can be supplied on customer's cards.

PASTORIZA ELECTRONICS, INC.

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eeem File System
Electronic Engineering
2000

DAC-10ic
DIGITAL ANALOG CONVERTER



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SPECIFICATIONS

<i>input</i>	10-bit binary number
<i>Input Voltage</i>	"0" $\leq$ +.2 volts, "1" $\geq$ +2 volts
<i>Conversion Command Input</i>	+2 volt, .2 usec rise time
<i>Conversion Gain</i>	1 bit = 10 mv.
<i>Total Conversion Time</i>	1.0 microseconds
<i>Resolution</i>	1 part in 1024
<i>Output Range</i>	0 volts to -10 volts
<i>Output Impedance</i>	$\leq$ 1 ohm
<i>Output Current</i>	$\pm$ 20 mas.
<i>Power Supply Requirements</i>	$\pm$ 15 volts at 40 mas. +4.5 volts at 200 mas.
<i>Linearity</i>	.05% or $\frac{1}{2}$ bit
<i>Warm-up drift</i>	10 mv
<i>Variation with Supply Voltages</i>	$\frac{1}{4}$ volt in +15 causes 10 mv. error 1 volt in -15 causes 10 mv. error 1 volt in +4.5 causes 2 mv. error

TESTING AND QUALITY CONTROL

All DAC 101c cards undergo a complete test program. Test results are supplied to the customer. The most important tests are listed below:

Test I: Input vs. Output, indicating maximum absolute error in gain and offset.

Test II: Power Supply tolerances and logical signal limits for input and output, measured at 0°C, 25°C, and 50°C.

Test III: Temperature coefficient, offset, and gain variation over the temperature range -20°C +70°C.

Test IV: Differential linearity and bit width distribution.

Test V: Temperature Cycling.

All units are warranted for trouble free operation for one year.

Special warranty arrangements can be made.

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APPLICATIONS

DAC 10_{IC} is recommended for systems where digital information must be converted to voltage signals at high speeds. The combination of narrow aperture strobing, internal digital storage, and rapid settling time make this unit ideal for interfacing with modern high-speed computer systems.

Options requiring lower speed, fewer bits, or no internal digital storage are available at considerable economy.

DAC 10_{IC} utilizes an operational amplifier with a boosted output. This circuit provides very low output impedance at high current and voltage ranges. In addition, the operational amplifier permits flexibility in output ranges and levels. Feedback and input offset connections are made available at the connector pins.

Card Inputs:

Convert Command signal

+15 VDC

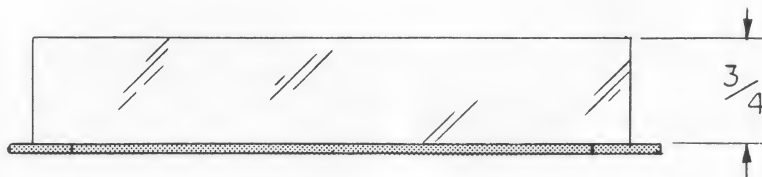
-15 VDC

+4.5 VDC

Gnd.

10-Binary Signals

Offset Bias



Conversion Ratio

{ Input = 0000000000
 Output = 0.00 volts

{ Input = 1111111111
 Output = -9.99 volts



Outputs:

0 to -10 volts at 10 mas.

Offset Output

Signal Ground

Ref. Int/Ext.

PASTORIZA Electronics, Inc., manufactures a complementary card of the DAC 10_{IC} series which is used for converting analog voltages into 10-binary bit parallel code.

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AUXILIARY EQUIPMENT FOR SYSTEMS DESIGN

In order to simplify the use of DAC 10ic in systems and instruments, prewired versions of Digital-to-Analog converters are available in custom design. Below is a typical converter system.



SPECIFICATIONS:

Description	12-bit digital-analog converter system
Input	12-bit binary number "0" = Gnd "1" = -3 Volts
Output	Test Switch ± 10 Volts at 10 mas.
Speed of Response	1 microsecond
Package form	Standard rack mount 3½" panel height. Unit contains all power supplies, neon light drivers, test features.

CUSTOM DESIGN

DAC 10ic is fabricated in a manner which permits custom design with a minimum of extra cost. Quotations will be provided on special equipments including multiple units in one chassis. Engineering coordination is included in quotations to insure customer satisfaction.